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THE AMERICAN AEDES OF THE SCAPULARIS GROUP

(Diptera, Culicidæ)

BY HARRISON G. DYAR

In this group there is no sharp separation to be made between the species on the characters of the male hypopygium. All are essentially alike. The group itself, however, is sharply marked, as shown by me (Ins. Ins. Mens., viii, 104, 1920). The group is wholly American, having no representative in Europe. The species are separable by the coloration of the adult, as follows:

Mesonotum entirely yellowish brown.....*thelcter* Dyar
Mesonotum with two yellow lines on a brown ground, the dorsal area brown.

The yellow lines very broad.....*obturator* Dyar & Knab

The yellow lines moderate, straight.....*trivittatus* Coquillett

These lines narrow, widening posteriorly....*cuneatus* Dyar & Knab

These lines very narrow, straight....*angustivittatus* Dyar & Knab

Mesonotum with a broad central golden band, the sides brown.

Smaller species, abdominal bands narrow, pale....*tortilis* Theobald

Larger species, the abdomen with lateral white spots..*lynchii* Brèthes

Mesonotum with a broad central silvered area.

Silvery area straight, running back to scutellum...*crinifer* Theobald

Silvery area rounded, situated anteriorly.

Abdomen with basal segmental bands above,

condolescens Dyar & Knab

Abdomen without dorsal bands.

Hind tibiae entirely black.

Legs bright bronzy brown; dorsum of abdomen

metallic.....*infirmatus* Dyar & Knab

Legs and dorsum of abdomen black,

euplocamus Dyar & Knab

Hind tibiae with a pale stripe below...*scapularis* Rondani

SPECIES 1

Aëdes (Ochlerotatus) obturbator Dyar & Knab.

Culex trivittatus Coffin (not Coquillett), in Shattuck, The Bahama Isl., 289, 1905.

Aëdes obturbator Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 9, 1907.

Aëdes obturbator Theobald, Mon. Culic., v, 485, 1910.

Aëdes obturbator Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 778, 1917.

Aëdes (Ochlerotatus) obturbator Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aëdes (Heteronycha) obturbator Dýar, Ins. Ins. Mens., viii, 105, 1920.

The male of this interesting species is still unknown; but it is probable that when found it will correspond to the place assigned. The form is known only from the Bahama Islands.

SPECIES 2

Aëdes (Ochlerotatus) trivittatus Coquillett.

Culex trivittatus Coquillett, Journ. N. Y. Ent. Soc., x, 193, 1902.

Culex trivittatus Smith, Ent. News, xv, 145, 1904.

Culex trivittatus Felt, Bull. 79, N. Y. State Mus., 333, 1904.

Culicada trivittatus Felt, Bull. 79, N. Y. State Mus., 391*b*, 1904.

Culex inconspicuus Grossbeck Ent. News, xv, 333, 1904.

Culex trivittatus Smith, Bull. 171, N. J. Agr. Exp. Sta., 38, 1904.

Culex trivittatus Britton & Viereck, Rept. Conn. Agr. Exp. Sta., 1904, 269, 272, 273, 1905.

Culex trivittatus Smith, N. J. Agr. Exp. Sta., Rept. Mosq., 286, 1905.

Culex inconspicuus Smith, N. J. Agr. Exp. Sta., Rept. Mosq., 295, 1905.

Culex trivittatus Blanchard, Les Moust., 339, 1905.

Culex inconspicuus Smith & Grossbeck, Psyche, xii, 18, 1905.

Culicada trivittatus Felt, Bull. 97, N. Y. State Mus., 447, 1905.

Culex inconspicuus Dyar, Journ. N. Y. Ent. Soc., xiii, 108, 1905.

Aëdes trivittatus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 197, 1906.

Aëdes inconspicuus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 199, 1906.

Ochlerotatus trivittatus Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 18, 1906.

- Ochlerotatus inconspicuus* Coquillett, U. S. Dept. Agr., Bur. Ent.;
Tech. Ser. 11, 21, 1906.
- Ochlerotatus trivittatus* Dyar, U. S. Dept. Agr., Bur. Ent., Circ.
72, 5, 1906.
- Ochlerotatus inconspicuus* Dyar, U. S. Dept. Agr., Bur. Ent., Circ.
72, 5, 1906.
- Aedes angustivittatus* Dyar & Knab, Journ. N. Y. Ent. Soc., xv,
9, 1907.
- Pseudohowardina trivittata* Theobald, Mon. Culic., iv, 224, 1907.
- Culex inconspicuus* Theobald, Mon. Culic., iv, 438, 1907.
- Aedes trivittatus* Busck, Smiths. Misc. Colls., quart. iss., lii, 63,
1908.
- Culex (Ochlerotatus) trivittatus* Viereck, 1st Ann. Rept. Comm.
Health Pa., 471, 1908.
- Culex (Ochlerotatus) inconspicuus* Viereck, 1st Ann. Rept. Comm.
Health Pa., 471, 1908.
- Culex inconspicuus* Theobald, Mon. Culic., v, 387, 1910.
- Pseudohowardina trivittata* Theobald, Mon. Culic., v, 227, 1910.
- Aedes angustivittatus* Theobald, Mon. Culic., v, 485, 1910.
- Aedes trivittatus* Morse, Ann. Rept. N. J. State Mus., 1909, 719,
1910.
- Aedes inconspicuus* Morse, Ann. Rept. N. J. State Mus., 1909,
719, 1910.
- Aedes trivittatus* Headlee, Bull. 276, N. J. Agr. Exp. Sta., 103,
1915.
- Aedes trivittatus* Felt, 31st Rept. N. Y. State Ent., 67, 1916.
- Aedes trivittatus* Howard, Dyar & Knab, Mosq. No. & Cent. Am.
& W. I., iv, 773, 1917.
- Aedes angustivittatus* Howard, Dyar & Knab, Mosq. No. & Cent.
Am. & W. I., iv, 776, 1917.
- Aedes trivittatus* Dyar, Ins. Ins. Mens., v, 117, 1917.
- Aedes (Ochlerotatus) trivittatus* Dyar, Ins. Ins. Mens., vi, 77, 1918.
- Aedes (Ochlerotatus) angustivittatus* Dyar, Ins. Ins. Mens., vi,
77, 1918.
- Aedes (Heteronycha) trivittatus* Dyar, Ins. Ins. Mens., viii, 105,
1920.
- Aedes (Heteronycha) angustivittatus* Dyar, Ins. Ins. Mens., viii,
105, 1920.

This species inhabits the warmer parts of the United States, Massachusetts to Texas, Colorado and Montana, Mexico, Central America and Panama. The width of the yellow lines is subject to much variation. The narrow form was described from Mexico as *angustivittatus*; but similarly narrowly marked

specimens occur elsewhere, and the name cannot represent more than a variety. In southern Mexico and Central America a form occurs in which the yellow lines on the mesonotum are widened posteriorly or somewhat irregular. This may be distinguished as

***Aedes trivittatus cuneatus* Dyar & Knab.**

Aedes cuneatus Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 54, 1908.

Aedes argentescens Dyar & Knab, Proc. U. S. Nat. Mus., xxxv, 55, 1908.

Aedes cuneatus Theobald, Mon. Culic., v, 620, 1910.

Aedes argentescens Theobald, Mon. Culic., v, 620, 1910.

Aedes cuneatus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 770, 1917.

Aedes (Ochlerotatus) cuneatus Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) cuneatus Dyar, Ins. Ins. Mens., viii, 105, 1920.

Besides the localities mentioned in the monograph, specimens have been taken in Costa Rica by Dr. A. Alfaro, Ciruelas, November 14, 1920; San José, November 22, 1920; Matapolo, January 16, 1921; Aquiares, February 28, 1921; Birris, March 12, 1921; Puntarenas, July 15, 1921.

SPECIES 3

***Aedes (Ochlerotatus) tortilis* Theobald.**

Culex tortilis Theobald, Entom., xxxvi, 281, 1903.

Culex tortilis Theobald & Grabham, Mosq. or Culic. of Jamaica, 26, 1905.

Aedes auratus Grabham, Can. Ent., xxxviii, 313, 1906.

Aedes auratus Dyar & Knab, Proc. Biol. Soc. Wash., xix, 163, 1906.

Culex tortilis Theobald, Mon. Culic., iv, 428, 1907.

Culex tortilis Theobald, Mon. Culic., v, 598, 1910.

Aedes tortilis Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 806, 1917.

Aedes (Ochlerotatus) tortilis Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) tortilis Dyar, Ins. Ins. Mens., viii, 105, 1920.

This form inhabits the Antilles. In the monograph we treated the forms occurring on the several islands as species. I think it will be better to use the subspecific conception for

them. *Aedes tortilis tortilis* Theobald inhabits Jamaica, and gives its name to the species on account of having been described first. There are slight differences traceable in the mesonotal ornamentation in the specimens from the different islands, as given in the monograph (vol. iv, 617, dichotomies 62 to 64 of the table); but these are far from constant.

Aedes tortilis plutocraticus Dyar & Knab.

Culex confirmatus Coffin (not Lynch), in Shattuck, The Bahama IIs., 282, 1905.

Aedes plutocraticus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 11, 1907.

Aedes plutocraticus Theobald, Mon. Culic., v, 485, 1910.

Aedes plutocraticus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 804, 1917.

Aedes (Ochlerotatus) plutocraticus Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) plutocraticus Dyar, Ins. Ins. Mens., viii, 105, 1920.

This is the form inhabiting the Bahamas. We have only the series collected by Dr. T. H. Coffin. The larva is still undescribed.

Aedes tortilis bracteatus Coquillett.

Culex bracteatus Coquillett, Proc. Ent. Soc. Wash., vii, 184, 1906.

Aedes habanicus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 198, 1906.

Ochlerotatus bracteatus Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 19, 1906.

Aedes bracteatus Pazos, Anal. Acad. Cien. méd., fis. y nat. de la Habana, xlv, 423, 1908.

Aedes bracteatus Pazos, San. y Ben., ii, 47, 320, 1909.

Culex bracteatus Theobald, Mon. Culic., v, 612, 1910.

Aedes bracteatus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 802, 1917.

Aedes (Ochlerotatus) bracteatus Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) bracteatus Dyar, Ins. Ins. Mens., viii, 105, 1920.

This is the form inhabiting Cuba.

Aedes tortilis balteatus Dyar & Knab.

Aedes balteatus Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 9, 1907.

Aedes balteatus Theobald, Mon. Culic., v, 485, 1910.

Aedes balteatus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 809, 1917.

Aedes (Ochlerotatus) balteatus Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) balteatus Dyar, Ins. Ins. Mens., viii, 105, 1920.

This is the form inhabiting Santo Domingo.

***Aedes tortilis virginensis*, new subsepecies.**

Aedes sp., Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 804, 1917.

The above name may be applied to the single specimen from St. Thomas mentioned in the monograph. The mesonotum is broadly golden in the middle, widening sharply centrally, then roundedly retreating, the golden not reaching antescutellar space except narrowly in the center.

Type, female, No. 24898, U. S. Nat. Mus.; St. Thomas, Virgin Islands, August, 1905 (A. Busck).

SPECIES 4

***Aedes (Ochlerotatus) lynchii* Brèthes.**

Heteronycha dolosa Lynch Arribalzaga (in part, ♀), Rev. Mus. de la Plata, ii, 156, 1891.

Culex lynchii Brèthes, Ann. Mus. Nac. Hist. B. A., xxviii, 212, 1916.

Heteronycha dolosa Howard, Dyar & Knab (in part, ♀), Mosq. No. & Cent. Am. & W. I., iv, 613, 1917.

Culex tapinops Brèthes, Physis, iii, 227, 1917.

Aedes lynchii Dyar, Ins. Ins. Mens., vii, 87, 1919.

Aedes (Heteronycha) dolosa Dyar (in part), Ins. Ins. Mens., vii, 88, 1919.

Aedes (Heteronycha) dolosa Dyar (in part), Ins. Ins. Mens., viii, 105, 1920.

Aedes (Ochlerotatus) lynchii Dyar, Ins. Ins. Mens., ix, 149, 1921.

Much difficulty has arisen from Lynch's confused and erroneous account of his *Heteronycha dolosa*. It appears probable that he described from a male *Culex* and a female *Aedes*. Both of these were later redescribed by Brèthes, the *Culex* as *Culex bonariensis*, the *Aedes* as *Culex lynchii*. Theobald (Mon. Culic., ii, 151, 1901) placed *Heteronycha dolosa* as a synonym

of *Culex fatigans* Wied. (See also Mon. Culic., v, 383, 1910, where the reference is repeated). Blanchard makes the same reference (Les Moust., 353, 1905), copying Theobald. The synonymy is incorrect, as the male is not *fatigans* (= *quinquefasciatus* Say), but a distinct species of the *salinarius* group. However this is said to constitute a restriction of *Heteronycha* to the *Culex* element, and therefore Howard, Dyar and Knab were not at liberty to restrict *Heteronycha* to the *Aedes* element of Lynch, as in the reference cited from the monograph.

Brèthes described *lynchii* from females; but later he added to the confusion, by describing the supposed male of it, but his male was in reality a *Culex* (= *C. brethesi* Dyar). Consequently when he found the true male, he did not recognize it, and redescribed it under the name *tapinops*. By his excellent figure it is clear that the species belongs strictly to the *scapularis* group. I have also examined a male kindly sent by Dr. Juana Petrocchi.

The species is not uncommon in Argentina, presumably after specially heavy rains.

SPECIES 5

Aedes (*Ochlerotatus*) *crinifer* Theobald.

Culex crinifer Theobald, Mon. Culic., iii, 209, 1903.

Culex crinifer Peryassú, Os. Culic. do Brazil, 187, 1908.

Culex crinifer Theobald, Mon. Culic., v, 361, 1910.

Culex crinifer Surcouf & Gonzales-Rincones, Essai Dipt. vul. Venez., 181, 1911.

C(ulex) crinifer Lutz, Mem. Inst. Oswalddo Cruz, x, fasc., ii, 87, 1918.

Aedes (*Heteronycha*) *crinifer* Dyar, Ins. Ins. Mens., viii, 105, 1920.

Described from Brazil. I have a single male, by the kindness of Dr. Arthur Neiva, which shows the characteristic hypopygium of the *scapularis* group.

SPECIES 6

Aedes (*Ochlerotatus*) *scapularis* Rondani.

Culex scapularis Rondani, Studi ent., Baudi e Truqui, 109, 1848.

Ochlerotatus confirmatus Lynch Arribalzaga, Rev. Mus. de la Plata, ii, 146, 1891.

- Culex confirmatus* Giles, Handb. Gn. or Mosq., 320, 1900.
Culex confirmatus Theobald, Mon. Culic., ii, 42, 1901.
Culex confirmatus Giles, Handb. Gn. or Mosq., 2 ed., 443, 1902.
Culex confirmatus Taylor, Rev. Med. Trop., iv, 118, 1903.
Culex confirmatus Theobald, Mon. Culic., iii, 191, 1903.
Culex confirmatus Parker, Beyer & Pothier, Bull. 13, Yell. Fev. Inst., 40, 1903.
Culex confirmatus Lutz in Bourroul, Mosq. do Brazil 41, 72, 1904.
Culex confirmatus Pazos, Bull. Soc. Ent. France, 1904, 134, 1904.
Culex scapularis Blanchard, Les Moust., 335, 1905.
Culicada confirmatus Felt, Bull. 97, N. Y. Sta. Mus., 476, 1905.
Culex confirmatus Grabham, Can. Ent., xxxvii, 405, 1905.
Culex confirmatus Theobald, Gen. Ins., Dipt., 26 fasc., 26, 1905.
Culex confirmatus Theobald & Grabham, Mosq. or Culic. Jamaica, 25, 1905.
Culex confirmatus Goeldi (in part), Os. Mosq. no Pará, 93, 1905.
Aedes hemisurus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 199, 1906.
Ochlerotatus confirmatus Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 19, 1906.
Aedes indolecens Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 11, 1907.
Culex scapularis Autran, Anal. Dep. Nac. Hig., xiv, 20, 1907.
Culex confirmatus Aiken, Brit. Guiana Med. Ann., 1906, 68, 1907.
Aedes hemisurus Pazos, Rev. de Med. Trop., Habana, i, 99, 1908.
Culex confirmatus Peryassú, Os. Culic. do Brazil, 188, 1908.
Aedes scapularis Pazos, San. y Ben., ii, 47, 322, 1909.
Leucomyia scapularis Theobald (in part), Mon. Culic., v, 315, 1910.
Aedes indolecens Theobald, Mon. Culic., v, 485, 1910.
Aedes scapularis Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 783, 1917.
Aedes (Ochlerotatus) scapularis Dyar, Ins. Ins. Mens., vi, 77, 1918.
Aedes (Ochlerotatus) camposanus Dyar, Ins. Ins. Mens., vi, 128, 1918.
Aedes (Heteronycha) scapularis Dyar, Ins. Ins. Mens., viii, 105, 1920.

The form *scapularis scapularis* ranges over the whole of South America and most of the Antilles. The more northern forms were separated as species in the monograph, but will be arranged here as subspecies. The differences in coloration are slight, and not always readily appreciable. There are small differences in the larvae. That of *scapularis* has the body

pilose, the comb-scales feathered. Coming northward, the form *euplocamus* has the skin smooth or minutely spiculate, the comb scales still feathered. Farther north, the form *infirmatus* has the body smooth, the comb scales with a central point differentiated. The larva of *condolescens* is still unknown.

***Aedes scapularis euplocamus* Dyar & Knab.**

- Aedes euplocamus* Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 199, 1906.
Aedes euplocamus Dyar & Knab, Proc. Biol. Soc. Wash., xix, 162, 1906.
Aedes euplocamus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 787, 1917.
Aedes (Ochlerotatus) euplocamus Dyar, Ins. Ins. Mens., vi, 77, 1918.
Aedes (Heteronycha) euplocamus Dyar, Ins. Ins. Mens., viii, 105, 1920.

From Mexico and Central America.

***Aedes scapularis infirmatus* Dyar & Knab.**

- Culiselsa confirmatus* Dyar (not Lynch), Journ. N. Y. Ent. Soc., xiii, 186, 1905.
Aedes infirmatus Dyar & Knab, Journ. N. Y. Ent. Soc., xiv, 197, 1906.
Aedes infirmatus Dyar, U. S. Dept. Agr., Bur. Ent., Circ. 72, 5, 1906.
Aedes infirmatus Thibault, Proc. Ent. Soc., Wash., xii, 18, 1910.
Aedes infirmatus Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 781, 1917.
Aedes (Ochlerotatus) infirmatus Dyar, Ins. Ins. Mens., vi, 77, 1918.
Aedes (Heteronycha) infirmatus Dyar, Ins. Ins. Mens., viii, 105, 1920.

From the Gulf coast of the United States to North Carolina.

***Aedes scapularis condolescens* Dyar & Knab.**

- Culex confirmatus* Coffin, in Shattuck, The Bahama IIs., 282, 1905.
Ochlerotatus confirmatus Coquillett, U. S. Dept. Agr., Bur. Ent., Tech. Ser. 11, 19, 1906.
Aedes condolescens Dyar & Knab, Journ. N. Y. Ent. Soc., xv, 11, 1907.
Aedes condolescens Pazos, Anal. Acad. Cien. med., fis. y nat. de la Habana, xlv, 422, 1908.

Aedes condolezens Pazos, San. y Ben., ii, 47, 321, 1909.

Aedes condolezens Theobald, Mon. Culic., v, 485, 1910.

Aedes condolezens Howard, Dyar & Knab, Mosq. No. & Cent. Am. & W. I., iv, 789, 1917.

Aedes (Ochlerotatus) condolezens Dyar, Ins. Ins. Mens., vi, 77, 1918.

Aedes (Heteronycha) condolezens Dyar, Ins. Ins. Mens., viii, 105, 1920.

From Cuba and the Bahamas. Neither the male nor larva of this form has been described.

SPECIES 7

Aedes (Ochlerotatus) thelcter Dyar.

Aedes (Taeniorhynchus?) thelcter Dyar, Ins. Ins. Mens., vi, 129, 1918.

Aedes (Ochlerotatus) thelcter Dyar & Ludlow, The Military Surgeon, i, 62, 1922.

The original series of females has been supplemented by a male from Camp McAllen, Texas, August 28, 1921, which I have through the kindness of Dr. C. S. Ludlow. The hypopygium shows the characteristic claspette filament with double retrose spine. The male is marked as the female, but the abdominal spottings are small and faint.

TWO MOSQUITOES NEW TO THE MOUNTAINS OF CALIFORNIA

(Diptera, Culicidae)

By HARRISON G. DYAR

The collecting season of 1921 resulted in the addition of two more species to the known fauna of the Californian mountains.

Culex territans Walker (*restuans* Theobald).

A single female was bred from an early grassy pool in a narrow mountain valley, which contained large numbers of *Aedes cataphylla* Dyar and a few *Aedes palustris* Dyar.

Little Truckee River, California, May 7, 1921 (H. G. Dyar).